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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/21/2006

Anton Bech

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EXAMINER

HUDA, SAEED M

ART UNIT

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1791

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/599,152	BECH, ANTON	
	Examiner	Art Unit	
	SAEED M. HUDA	1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 May 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) 32-40 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/21/2006 and 05/06/2009</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restriction

1. Applicant's election with traverse of claims 1-31 in the reply filed on 05/06/2009 is acknowledged and claims 32-40 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected group, there being no allowable generic or linking claim. The traversal is on the ground(s) that groups I-III related to a single general inventive concept under PCCT Rule 13.1. This is not found persuasive because the inventions listed as groups I-III **do not** relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

The technical feature common to Groups I-III is the invention related a mold with an air permeable surface member and a drainage system. This cannot be a special technical feature under PCT Rule 13.2, because the element is known in the prior art.

Bezzola (WO 99/07532) teach a plastic tool formed from a casing resin and having a working face which comprises a pre-formed metal sheet. The pre-formed metal surface may be of any derived metal such as aluminum, steel, stainless steel, galvanized steel, custom textured sheet or copper. The tool can be used in vacuum molding. Holes are drilled through the metal sheet. The inner of the mold could be a porous mixture of, for example, an epoxy casting resin and aluminum granulate. The porous layer is surrounded by an impervious covering through which it is attached to a vacuum line, thereby forming a vacuum mould. The mould tool can also comprise heating and cooling tubes (abstract).

Accordingly, the special technical feature linking the three inventions does not provide a contribution over the prior art, and no single general inventive concept exists. Therefore, restriction is appropriate.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. The term "large member" used is vague and has no well recognized meaning in the particular filed, so that it lends the reader to doubt about the technical feature to which it refers, thereby rendering the definition of the subject-matter of claim 1 unclear.

b. The use of the term "preferably" in claims 2-4, 7-12, 14-17, 20, 22-24, 27, and 31 leads to confusion as to the real limitation of the scope of the subject matter of the corresponding claims.

c. Claim 3 has been drafted as a depending on claim 1, but from its wording, namely the use of the expression "the network", it must be considered as dependent on claim 2. Moreover, in claim 3, the expression "the two-dimensional network" is obscure, as it is difficult to imagine how a two- dimensional feature an serve for transport of air. The corresponding paragraph on page 8 of the

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description does not bring any explanation of what is meant. Consequently, the subject matter of claim 3 lacks clarity.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Furuya et al. (US 6499715 B1) in view of Bezzola (WO 99/07532).

a. Regarding claims 1, 13, 23-24, 28, and 30-31, Furuya et al. teach a resin mold that has a surface layer (active mold surface) (abstract) where the mold can be evacuated to make a vacuum formed sheet or panel product (column 6, lines 45-49) and the use of cooling pipes 24 (column 4, lines 27-40). This would indicate that there is an air-drainage system present. The surface of the mold has bores through which air can travel (air permeable) and air may be transported between the active mold surface and the air drainage system. The air permeable surface member forms the substantially entire active mold surface (figure 1, column 4, lines 26-40, and column 6, lines 45-49). Furuya et al. go on to teach a main body 10 (support structure) is arranged to support the air-drainage system (including the cooling pipes) and the air permeable surface which is composed of steel balls (additional component of the air-drainage system) (column 2, lines 53-55 and figure 1). The main body is used to support

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the mold and it can be seen that the support structure would provide for a major part of the load bearing ability of the mold (figure 1). The air permeable surface would not be substantially airtight in that air flow is necessary and it would necessarily follow that a system would be present in order to control the amount of vacuum or pressure and that the drainage system would be airtight so that the air may be efficiently removed via the bores. Furuya et al. fail to teach that the support structure forms an entire surface which is substantially airtight.

Bezzola teaches a plastic tool formed from a casting resin that has a working face which comprises a pre-formed metal sheet (abstract). Bezzola teaches the use of a base where said base is made of a porous layer 18 that is surrounded by an impervious covering 24 (i.e. would be airtight) (bottom of page 6 and figures). It would have been obvious to one having ordinary skill in the art at the time of the invention to use the impervious covering of Bezzola to make the base structure of Furuya et al. airtight because this allows the air pulled through the surface of the mold to be directed to a specific location for removal. If the air was pulled through a mold that was not airtight, this would result in a process and apparatus that was inefficient.

b. Regarding claim 2 and 6, Furuya et al. in view of Bezzola teach that the air transport system comprises a network (channels) for transport of air (Furuya et al. figure 1 #20 and #24) where said network follows the active mold surface (Furuya et al. figure 1).

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- c. Regarding claim 3, Furuya et al. in view of Bezzola teach that the system used to evacuate air through (air drainage system) is comprised of a permeable surface which is composed of steel balls (islands of solid material) (Furuya et al. column 2, lines 53-55 and figure 1). It would follow that air that is pulled via vacuum through the mold would pass through the spaces between the network of islands (Furuya et al. figures).
- d. Regarding claim 4, Furuya et al. in view of Bezzola teach that the mold has steel balls (islands) with a circular cross-sectional shape (Furuya et al. figures).
- e. Regarding claim 5, Furuya et al. in view of Bezzola teach that the balls are connected (Furuya et al. figures) and the point of connection can be considered to be the connector. From the figures, it can be seen that the connector height is smaller than the height of the islands. In the event that the connectors, as described above, do not read on the claimed connectors, it would have been obvious to one having ordinary skill in the art at the time of the invention to space the balls as necessary to get the desired airflow and that this spacing would be provided via the use of connector pieces placed such that airflow would be preserved. The size of the connector pieces would be smaller than the island because if the pieces were larger than the islands, the airflow holes would be too large.
- f. Regarding claim 7-9 and 14-21, Furuya et al. in view of Bezzola fail to explicitly teach the claimed cross section, distance between neighboring

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channels, percentage of openings, circle diameter, density of passage structure openings, or open volume percentage. Absent evidence of unexpected results obtained from using the claimed gap cross section or distance, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected a suitable value for the above values to effectively allow proper airflow, the above values being a result effective variable routinely optimized by those of skill in the art. The optimization of a range or other variable within the claims that flows from the "normal desire of scientists or artisans to improve upon what is already generally known" is prima facie obvious. *In re Peterson*, 315 F.3d 1325, 1330 (Fed. Cir. 2003) (determining where in a disclosed set of percentage ranges the optimum combination of percentages lies is prima facie obvious). The discovery of an optimum value of a variable in a known process is usually obvious. *In re Aller*, 220 F.2d 454, 456 (C.C.P.A. 1955). See also *In re Boesch*, 617 F.2d 272, 276 (C.C.P.A. 1980) ("[D]iscovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art."). See also *In re Geisler*, 116 F.3d 1465, 1470 (Fed. Cir. 1997) ("[I]t is not inventive to discover the optimum or workable ranges by routine experimentation." (quoting *Aller*, 220 F.2d at 456)); *In re Kulling*, 897 F.2d 1147, 1149 (Fed. Cir. 1990) (finding no clear error in Board of Patent Appeals and Interferences' conclusion that the amount of eluent to be used in a washing sequence was a matter of routine optimization known in the pertinent prior art and therefore obvious).

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g. Regarding claims 10-11, Furuya et al. in view of Bezzola teach that the air drainage system and the air permeable surface is integrated with the support structure (Furuya et al. figure 1).

h. Regarding claim 12, Furuya et al. in view of Bezzola teach air-drainage system is positioned between the support structure and the air-permeable surface member (Furuya et al. figure 1).

i. Regarding claim 22, Furuya et al. in view of Bezzola teach that the mold's air permeable surface which is composed of steel balls (column 2, lines 53-55 and figure 1), which is a heat resistant material. This would indicate that the surface is mechanically and chemically stable at the curing temperature. The softening and melting points of steel are well above the claimed temperatures.

j. Regarding claim 25, Furuya et al. in view of Bezzola teach the use of a vacuum forming tool made of polyurethane and other foam molds and polystyrene foam molds (Bezzola page 3, paragraph 1).

k. Regarding claim 26, Furuya et al. in view of Bezzola teach that holes may be drilled into the surface to create an air permeable surface (Bezzola figure 3 and page 6 bottom).

l. Regarding claim 27, Furuya et al. in view of Bezzola fail to teach the use of a mold release agent; however, it would have been obvious to one having ordinary skill in the art at the time of the invention to use mold release to prevent the produced article from sticking to the mold and circumvent the need of having to force the article from the mold surface which may damage the surface.

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m. Regarding claim 29, it would have been obvious to one having ordinary skill in the art at the time of the invention to have the mold surface secured releasably to the air drainage system in that it could be detached for easy cleaning and refurbishing.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to SAEED M. HUDA whose telephone number is (571)270-5514. The examiner can normally be reached on 8:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/KHANH NGUYEN/
Primary Examiner, Art Unit 1791

/SAEED M. HUDA/
Examiner, Art Unit 1791